

DOCUMENT RESUME

ED 433 816

IR 057 446

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TITLE Re-Engineering Academic Library Services: The Case of the Technical Knowledge Center & Library of Denmark.
PUB DATE 1999-05-00
NOTE 9p.; In: The Future of Libraries in Human Communication: Abstracts and Fulltext Documents of Papers and Demos Given at the [International Association of Technological University Libraries] IATUL Conference (Chania, Greece, May 17-21, 1999) Volume 19; see IR 057 443.
AVAILABLE FROM Web site:
<http://educate.lib.chalmers.se/IATUL/proceedcontents/chanpap/bjoernsha.html>
PUB TYPE Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Libraries; Access to Information; Costs; Databases; *Electronic Journals; Foreign Countries; Higher Education; Information Technology; Library Administration; *Library Development; Library Funding; Library Personnel; *Library Services; Publishing Industry; Scholarly Journals; *Scientific and Technical Information; *Staff Development; User Needs (Information)
IDENTIFIERS Denmark; *Electronic Resources

ABSTRACT

The traditional mode of operation of academic libraries is in crisis due to a combination of zero growth funding, rapidly escalating pricing on information resources (especially scientific journals), necessary investments in technology and human resource development, and increasing customer expectations. These issues are addressed as they relate to DTV (i.e., the university library at the Technical University of Denmark, as well as Denmark's national center for technical scientific information). Developments in scientific publishing are discussed, including implementation of new technology, and increased cooperation and competition among publishers, database producers, agents, and other intermediaries. Taking advantage of these developments in scientific publishing, including coping with the escalating pricing of information resources, and the cost of processing and transforming these products into user services, is considered. The plan for re-engineering DTV library services is described, as well as the following main elements of the plan: (1) development of a common user interface to databases, electronic tables of contents, and electronic full-text journals; (2) staff reductions; and (3) a human resource development project to train staff in new procedures associated with the handling of electronic resources. Major service improvements, lessons learned, and perspectives for academic libraries are summarized. (MES)

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RE-ENGINEERING ACADEMIC LIBRARY SERVICES - THE CASE OF THE TECHNICAL KNOWLEDGE CENTER & LIBRARY OF DENMARK

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INTRODUCTION

The traditional mode of operation of academic libraries is in deep crisis⁰. Primary reasons here is the combination of zero growth funding, rapid escalating pricing on information resources (especially scientific journals), and necessary investments in technology, human resource development and increasing customer expectations.

DTV is the university library at the Technical University of Denmark and as well the national centre for technical scientific information in Denmark. DTV has like many other academic libraries experienced the above problems during the last decade. Operating with more or less stable funding during these years extensive cancellations of journals have taken place. The number of subscriptions has declined about 40% while the expenses held for purchase of books, journals etc. has increased about 20%. It is obvious that this development cannot proceed in the long run and that this will bring the concept of the comprehensive academic library in question.

As there is no reason to expect significant increase in the funding of the library the above in itself calls for fundamental reconsideration of the roles of the library, its services and mode of operation. Furthermore the dramatic developments in information technology during the last 6-7 years put a lot of pressure on investments in information technology and as well on development of new competence in the library staff.

In short: A number of constraints, pressures and developments call for rather dramatic changes if the academic library shall survive in the long run.

The developments in scientific publishing

Commercial publishers and scholarly societies are implementing new technologies in their productions processes and services. During the past few years all the major publishers have, on a large scale, produced electronic editions of their scientific journals. A number of new journals are only available in electronic format.

Publishers, database producers, subscription agents and other intermediaries are already marketing their own "integrated electronic libraries" - many of these targeted and tailored towards the end user. These products have the potential of bypassing the academic libraries; some of the producers won't even deal with libraries! Some publishers offer discounts to customers who go for electronic journals only. This pricing strategy aims at eliminating the print edition in order to save costs in the future. What we are witnessing here is a dramatic change in production processes and services. These changes require investments on a significant scale from both producers and customers.

Furthermore, an increased co-operation and competition among publishers, database producers, agents and other intermediaries is taking place. Co-operation, in the sense that publishers offer bibliographic data to database producers in order to increase the demand for their electronic full text journals. At the same time a restructuring of the publishing industry is taking place, often leading to mergers resulting in job redundancy operations.

There is no sign whatsoever that the same processes of restructuring will not happen to libraries as well! It is foreseeable that, if academic libraries want to survive as institutions, they will have to change their production processes and services, as well as that the competition - and co-operation - between libraries and indeed co-operation between libraries and publishers, database producers, agents and other intermediaries has to increase.

Taking advantage of developments in scientific publishing

The proliferation of new technology applications in scientific publishing and library and information services and especially electronic journals constitutes of course many problems and challenges for academic libraries. But most important also the opportunity to cope with the most important problem: the escalating pricing of information resources and indeed the cost of processing and transforming these products into user services.

At this point I would like to add that I consider the ongoing discussion on the pricing of scientific journals to be too narrow. There is no point in focussing on the pricing of journals without considering the whole picture of expenses related to providing information services based on print or electronic journals. If library and information managers really want to develop new services based on electronic journals one have to take into account all expenses involved. There is a tendency to forget that the handling of the print journal, due to the paper technology is a very costly operation involving a lot of staff costs not only in the initial inclusion of the journal but also on a continuous basis (shelving, reshelving, checking in and out etc.) not to mention the expenses in library building and maintenance.

The launching of electronic journals, the purchase agreements and consortia options offer new opportunities in developing modern library and information services with a whole new cost structure. Academic libraries may be able to render services based on electronic journals at a lower cost than what is the case of print journals.

There are a lot of savings to be encountered when library staffs do not have to cope with the print issues and the numerous tasks connected herewith. The cost savings indeed will not only be in the traditional technical services but as well in customer services. When users are able to access a critical mass of resources from their desktop the workload of the customer service staff will begin to reduce (fewer loans, overdue notices, and less photocopying).

The plan for re-engineering the library services

In order to really cope with the current problems and to take the necessary measures in redirecting the library and information services the DTV management in May 1997 drew up a plan for the discussion on the library board.

The main points in the plan were as follows:

Concentrated efforts in bringing services and a *critical mass of content to the users desktop* - i.e. the acquisition of a critical mass of electronic journals and developing an easy to use common user interface to as many resources as possible.

Changing internal work procedures in order to pave the way for *going for electronic journals only* – i.e. not handling the print copy wherever possible.

Reducing staff accordingly – i.e. making 15% of staff redundant, thus saving approx. £ 300.000 yearly.

Investing in necessary hardware, *building large document server systems and developing the common user interface* to databases and electronic full text journals.

Initialising an institution wide *in house training programme* in order to secure remaining staff to be competent in new work procedures associated with handling electronic journals etc.

The plan was approved by the library board in June 1997 and was approved by the university board in September 1997. The administrative procedures as to the redundancy operations was run shortly after the decisions and the 13 staff were announced out of their jobs by May 1998 (incl. 6 months notice).

Developing the common user interface to databases and electronic full-text - the integrated article database service

The development of DTV's common user interface to databases, electronic tables of content and full-text journals called DTV's Article Database Service (DADS)¹ was all ready underway. Thus this part of the plan was just an emphasis for faster development of the contents of this service. A pilot service was launched for the university early 1998.

One of the major tasks as a consequence of the plan was approaching relevant publishers and scientific societies in order to negotiate license agreements. During late 1997 DTV took the lead in Denmark in establishing consortia on electronic databases and journals. From early 1998 to date a number of license agreements are in place – for instance consortias have been established with different groups of Danish/Nordic libraries on Elsevier, Springer, Academic Press, Kluwer, IEL etc.

Licensing electronic journals is not a new task for DTV as we were one of the earliest subscribers to the Elsevier Electronic Subscription Service (from January 1997 approx. 300 Elsevier journals have been loaded at DTV). From the outset these data were integrated with a local loading of the INSPEC database as well as the electronic tables of content of approx. 2.500 journals from SwetScan. These data sets were the contents of the test system. Since then this service has been developed further. Some 7.000 additional electronic tables of contents have been included as well as all journals from SIAM, Springer, Academic Press, MCB, Kluwer and the IEE/IEEE Electronic Library (approx. 500.000 documents) have been added. The system is probably one of the world largest integrated electronic services based on a single library. Today it is already a very important part of our service to the university users.

Due to the establishing of a number of consortia a significant increase in journal titles are available from vol. 1995 onwards. This of course gives savings in document delivery operations, ILL-operations, customer service etc. and thus contributes to the expected results of the re-engineering plan.

Staff reductions

The most controversial part of the reengineering plan of course was the reduction of the staff by 15%, that is every 7th staff member were to be made redundant. It is important here to underline, that the management repeatedly has emphasised, that academic libraries especially in the world of today are in severe competition with other actors and that the academic library therefore has to change themselves continuously. Due to a long tradition for organisational changes, changes in tasks and very good relations between the management and the shop stewards the process of planning the reductions were performed in

a – the circumstances taken in consideration – decent manner. A replacement agency was involved in the process of qualifying the staff involved in getting other jobs, which was the case for a number of the redundant staff in fact before they were due to be out of their current job.

Of course no matter how well the process of staff reductions is performed it will have considerable effects on the organisation to reduce the staff as much as it was the case here. Nevertheless the economic impact of the reductions was the prerequisite for the changing of priorities and the deliberate enhancement of the electronic services. In a way what we did was to cash in the savings beforehand, thus creating the financial foundation for licenses and development of electronic services and large document server systems.

Human resource development: The JULIA-project - developing new skills and competence, domestic PC's and distance learning

During summer 1997 DTV undertook an institution wide in house training programme for all categories of staff. The aim of the project was to secure that the transition from the primarily paper based library services to primarily electronic based library services was a direct process where the staff was trained in the new procedures associated with the handling of electronic resources.

The project – called the JULIA project² - had as one of its major features in outlining the work processes relevant for the handling of electronic journals throughout the library. Those work processes that were to replace existing work processes based on the handling of the paper editions.

A number of work processes were to be eliminated in the transition from handling paper journals to handling electronic journals.

More important though was the specifications of the new or more correctly added qualifications that there were to be in place in order to the staff being able to cope with the new tasks. Very quickly it became obvious that the single most important task of the transition was to see to, that all staff were very competent on the general management of information technology applications, embracing not only general office automation software (as for instance Microsoft Office), but as well E-mail, WWW-publishing, Internet searching etc.

In order to secure the fastest possible upgrading of staff competence in general information technology applications the decision was made to lease personal computers and install those in the homes of all staff. The personal computers and all telecommunication expenses are paid for by DTV. The primary educational initiative has been to offer to all staff to take the so-called PC drivers license, which is an approved certificate. The majority of the staff is currently in this process. The education takes place as distance education facilitated by the domestic PCs.

Furthermore a large number of short in-house training sessions has taken place. The sessions has been initiated, planned and processed by the staff not as a master education plan but more or less on demand.

An important spin off of these deliberate investments in development of staff competence for the electronic library has been a major shift in staff attitudes. It is now beyond discussion that the individual staff has her own responsibility in keeping up to date and prove herself valuable for the institution.

At the same time a restructuring of the internal organisation took place. Key features here are flattening the organisation, further delegation of decision making and responsibility. The results so far are, that initiatives from the staff are proliferating and that the entrepreneurial spirit is widespread in the organisation.

Major service improvements – doing more and better for less

The development towards the electronic library or more correctly the hybrid library at the DTV has of course been underway before the reengineering plan was approved, but the implementation of the plan has been a major boost in this process. In the course of one year we have managed to break the vicious circle of zero growth funding, escalating pricing on scientific journals, cancellations etc. and significantly increased the number of journal titles provided to our customers and as well increased the accessibility.

A major side effect of the process has been a university wide agreement, where the vast majority of the 33 departments at the university have agreed to cancel departmental journal subscriptions and transfer the payments for those subscriptions to DTV, in order to let DTV renew the subscriptions - if necessary (a lot of duplicates have been existing).

Furthermore the university management has recommended as a policy, that journals ought to be subscribed as electronic only, where ever possible. This will have great impact on subscriptions from year 2000 editions. Preliminary feedback from the university departments indicates that they as from year 2000 will go for electronic only. As from 1999 DTV has cancelled paper editions of the 300 Elsevier journals and the same is the case for journals from Academic Press.

As indicated this has all ready resulted in considerable savings and more savings are to come in this combination of centralised management of the purchasing and handling and decentralised services, where thousands of journals are accessible from the users desks 24 hours a day 7 days a week.

The overall results of the process have been a significantly rise in profile of DTV internally at the university and elsewhere. As a matter of fact researchers from the university increasingly are informing us that their colleges at other universities are approaching them in order to know more of their services. Late 1998 this has had the effect that two departments from another university have signed up on DTV services and in May 1999 2 Danish universities have entered an agreement with DTV on access to the system. A number of Nordic universities are seriously considering coming onboard. This will of course develop extensive user services at all involved sites and sound economic foundations for the operation and development of the system.

Lessons learned

If the library management really can convince the staff that the academic library is in dire straits and in severe competition with publishers, intermediaries and indeed other academic libraries, and that things therefore really have to change, then one of the primary prerequisites is in place for changes that are much more than incremental.

For years now the library management again and again has emphasised, that we have to look at the developments outside the libraries and prepare for radical changes in order to survive as an institution. But the end of the 90'es the overall majority of our staff has adopted this point of view and are working together with management in order to secure that the radical changes are being brought into action.

These rather considerable changes in staff attitudes are of course partly obtained due to deliberate investments in further education, extensive in-house training and lately distance learning activities facilitated by the domestic PC programme offered to all staff. Furthermore we have more or less eliminated traditional borders between different categories of staff as to who are allowed to perform which tasks. Flat organisations and cross-departmental teams really must be supported and developed.

These developments at the human resource side are one of the crucial prerequisites for a successful re-engineering. No matter how advanced your systems are it will not help you a lot unless your staff are

competent and ready to learn all along the process, without having to cope with resistant attitudes etc.

Incremental changes do not apply if academic libraries are to keep up with the demands for new and adequate services. In general I consider libraries much too little risk taking and too much caring of doing everything for everybody. For me it seems pretty obvious that academic libraries cannot continue with the present level of ambition in the print or paper world and at the same time develop a critical mass of adequate electronic services. We must choose in which of the directions we will invest the majority of our financial and human resources.

At the DTV we have chosen to go as much as possible for developing modern and easy to use electronic services, and this of course to a certain degree at the expense of the traditional services. Cancellations of print editions in bulk have begun, as from 1999 and from 2000 this will be very extensive.

All though we have not asked the users we have received considerable positive feedback both as to the daily services but as well politically from university decision-makers.

Perspectives for academic libraries

What is missing so far is a more widespread entrepreneurial attitude in the library community. If the academic libraries do not more actively involve in the new developments the risk is that other players on the scene will take over. The widespread take over, mergers etc. are sufficient evidence that the traditional roles in the distribution chain are blurring. Publishers, database producers, agents, aggregators and indeed libraries are taking up each other roles and due to traditions and predominant attitudes the academic libraries could easily be the losers in this process³

In the course of the last 2 years a number of new roles for the academic library are emerging. Today it is really difficult to state, whether DTV is an academic library or as well operating as a consortia builder, license administrator, aggregator, systems- or service provider etc.

However the common denominator of these activities is the vertical and horizontal extension of the core competence in the library and information profession: knowledge management.

Besides that there are a number of other areas where this competence can be brought into action. Just to mention a few: Supporting the necessary development in university teaching and learning processes, creating communication infrastructures for students and teachers, establishing systems, facilities and services for the virtual classroom etc.

In short: there are a lot of opportunities for an entrepreneurial approach to the management and development of academic library services. It indeed is possible to tackle those challenges the academic libraries are confronted with these years, provided that management are prepared to go for more than incremental changes.

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Last edited by J.F, 27th May, 1999.